

## INDEX TO ECOLOGY, VOLUME 74, 1993

## AUTHOR INDEX

## A

- Abrahams, M. V., 258  
 Abrams, P. A., 726  
 Adams, N. J., 390  
 Aeblischer, N. J., 1313  
 Aide, T. M., 455  
 Albers, K. B., 1157  
 Alkins-Koo, M., 1856  
 Allen, R. B., 1020  
 Anderson, C. R., 1836  
 Anderson, D. J., 367, 2462  
 Andrew, N. L., 292  
 Antibus, R. K., 1586  
 Apanius, V., 367  
 Araujo-Lima, C. A., 643  
 Arita, H. T., 627  
 Armstrong, D. P., 1092  
 Armstrong, R. A., 1707  
 Arnott, S. E., 2361

## B

- Bakken, G. S., 377  
 Balesdent, J., 1713  
 Barrett, G. W., 1153  
 Barrett, S. C., 1059  
 Bazzaz, F. A., 104, 1500, 2066, 2114  
 Beaver, R. A., 252  
 Benedix Jr., J., 1281  
 Berenbaum, M. R., 47  
 Bergelson, J. M., 999  
 Bertness, M. D., 2430  
 Beuchat, C. A., 1173  
 Bilbrough, C. J., 481  
 Bird, D. M., 367  
 Black, R. A., 1516  
 Blinn, D. W., 1246  
 Boettcher, A. A., 891  
 Boggs, C. L., 433  
 Bollinger, E. K., 1153  
 Bonassi, J. A., 643  
 Borel, G., 2444  
 Boring, L. R., 1551  
 Bormann, B. T., 583  
 Bormann, F. H., 583  
 Bowden, W. B., 583  
 Bowers, M. D., 1778, 2066  
 Bowman, W. D., 2085  
 Boyce, M. S., 2164  
 Bozinovic, F., 2003  
 Bradford, M. J., 1129  
 Bramble, J., 528  
 Brault, S., 1444  
 Brené M., D., 1733  
 Brown, J. H., 1847  
 Bryant, J. P., 2072  
 Bubier, J. L., 2240  
 Bucher, T. L., 1204, 2450  
 Budde, C., 367  
 Byrne, M. M., 1802

## C

- Calcote, R. R., 513  
 Caldwell, M. M., 612

- Callaway, R. M., 1567  
 Calvo, R. N., 1033  
 Campbell, D. R., 1043  
 Canham, C. D., 1792  
 Carpenter, F. L., 1173  
 Carpenter, S. R., 303  
 Carrascal, L. M., 2037  
 Caswell, H., 1444  
 Chanway, C. P., 863  
 Chapin, F. S., III, 124  
 Chappell, M. A., 1204, 2450  
 Cheplick, G. P., 1767, 2161  
 Christensen, K. M., 2270  
 Christensen, S., 1579  
 Cipollini, M. L., 751  
 Clancy, K. M., 442  
 Clausen, T., 2072  
 Clay, K., 1767  
 Clayton, M. K., 840  
 Clinton, B. D., 1551  
 Clinton, W. L., 1884  
 Closs, G. P., 238  
 Cobb, N. S., 2297  
 Cohen, J. E., 252  
 Cohen, Y., 467  
 Coley, P. D., 619  
 Conant, R. T., 2085  
 Congdon, J. D., 2413  
 Cousins, S. H., 252  
 Cowan, C. A., 1836  
 Cowling, R. M., 1490  
 Crist, T. O., 2231  
 Cronin, J. T., 1813  
 Cuker, B. E., 944  
 Culik, B. M., 1285  
 Cummings, D. L., 140  
 Cyr, H., 1234

## D

- D'Antonio, C. M., 83  
 Danell, K., 1136  
 Davidson, E. A., 130  
 Davis, F. W., 1567  
 Davis, M. B., 513, 826  
 Dawson, T. E., 798  
 De Meester, L., 1467  
 Dean, W. R., 390  
 DeAngelis, D. L., 252  
 Deegan, L. A., 653  
 Del Vecchio, T. A., 2297  
 Delph, L. F., 162  
 Denno, R. F., 1081, 1394  
 Denny, M. W., 1677  
 Denslow, J. S., 1733  
 Derrick, M. E., 2303  
 Dewey, B., 467  
 Dickman, C. R., 1871  
 Donnelly, P. J., 238  
 Dooley, J. L., Jr., 2436  
 Doucet, C. M., 1297  
 Drake, D. R., 1012  
 du Plessis, M. A., 390  
 Dudash, M. R., 959

- Dukas, R., 1337  
 Dunham, A. E., 2413  
 Dunkin, K., 130  
 Dunson, W. A., 183  
 Dutilleul, P., 1646

## E

- Edenius, L., 2261  
 Edwards, J. S., 954  
 Ehleringer, J. R., 798  
 Eickmeier, W. G., 1073  
 Ellison, A. M., 1733  
 Ellner, S. P., 1337, 1915  
 Elwood, J. W., 1264  
 Emms, S. K., 1750  
 Enright, N. J., 501  
 Ericson, L., 1136  
 Evans, R. D., 1516

## F

- Fahnestock, J. T., 549  
 Fiebig, D. M., 653  
 Findlay, S., 2326  
 Fisher, B., 261  
 Fisher, D. O., 1871  
 Floate, K. D., 2056  
 Floresroux, E. M., 999  
 Fontvieille, D., 2326  
 Ford, T. E., 653  
 Forsberg, B. R., 643  
 Foster, D. R., 982  
 Fraser, D. F., 1856  
 Frelich, L. E., 513  
 Friend, A. D., 792  
 Friese, C. F., 2231  
 Fryxell, J. M., 1297

## G

- Gaines, S. D., 1677, 2430  
 Galen, C., 1052  
 Gallardo, A., 152  
 Garcia-Barros, E., 1414  
 García-Méndez, G., 130  
 Garten, C. T., Jr., 2098  
 Gauthier, G., 2045  
 Gehring, C. A., 2297  
 Getty, T., 734  
 Gilbert, G. S., 840  
 Gilliam, J. F., 1856  
 Girardin, C., 1713  
 Gleeson, S. K., 1559  
 Goldwasser, L., 252, 1216  
 Good, R. E., 1559  
 Goodenough, J. L., 2303  
 Gordon, D. R., 68  
 Gotelli, N. J., 226  
 Grasman, B. T., 2279  
 Graumlich, L. J., 826  
 Greig, N., 2125  
 Griffith, D. M., 1373  
 Groffman, P. M., 855, 1579  
 Gross, J. E., 778

Grossman, G. D., 685  
 Gwynne, D. T., 1406

**H**

Haila, Y., 714  
 Halama, K. J., 1043  
 Hail, D., 20  
 Hamburg, S. P., 549, 583  
 Handelman, J., 840  
 Hanks, L. M., 1081  
 Hannon, S. J., 743  
 Hanski, I. K., 714  
 Harder, L. D., 1059  
 Harper, R. G., 1191  
 Harper, S. J., 1153  
 Hastings, A., 1362  
 Hechtel, L. J., 710  
 Helfrich, J., 653  
 Hellgren, E. C., 2279  
 Hendrix, W. H., III, 2303  
 Hensley, F. R., 2405  
 Henttonen, H., 30  
 Heong, K. L., 252  
 Hepp, G. R., 2027  
 Hershey, A. E., 653, 2315  
 Hill, J., 685  
 Hiltner, A. L., 653  
 Hixon, M. A., 1173  
 Hjälten, J., 1136  
 Hobbie, J. E., 653  
 Hobbs, N. T., 778  
 Hodges, S. A., 542  
 Hodum, P. J., 2462  
 Holt, R. D., 252  
 Holzwart, J. C., 2020  
 Howe, K., 2326  
 Hullar, M. A., 653  
 Hutchings, J. A., 673

**I**

Ingersoll, R. C., 583  
 Ives, A. R., 1929  
 Iwao, K., 20  
 Iwasa, Y., 1538

**J**

Jackson, D. A., 2204  
 Jackson, M. E., 342  
 Jackson, R. B., 612  
 Jackson, S., 390  
 Janes, D. N., 1204, 2450  
 Janzen, F. J., 332  
 Jastrow, J. D., 561  
 Joffre, R., 570  
 Johnson, C. L., 710  
 Juliano, S. A., 710, 1191

**K**

Kadmon, R., 816, 977  
 Kalff, J., 919  
 Karban, R., 1, 9, 39  
 Kareiva, P. M., 1929  
 Kauffman, J. B., 140  
 Kearsley, M. J., 2056  
 Keaster, A. J., 2303  
 Kelly, E. J., 351  
 Kenkel, N. C., 1700  
 Kennamer, R. A., 2027  
 Kennedy, P. L., 351

Kenward, R. E., 1313

Ketterson, E. D., 1183  
 King, R. M., 442  
 Kinney, K. K., 763  
 Kipphut, G., 653  
 Klein, E., 863  
 Kling, G. W., 2315  
 Knapp, A. K., 113, 549  
 Knops, J. M., 2465  
 Kodric-Brown, A., 1847  
 Kohn, A. J., 252  
 Kotzman, M., 1915  
 Kunin, W., 2145  
 Kursar, T. A., 619

**L**

LaFrankie, J. V., 1529  
 Lamont, B. B., 501  
 Lampert, W., 1455  
 Lathrop, R. C., 303  
 Law, R., 1347  
 Lawler, S. P., 174  
 Lawton, J. H., 252  
 Le Boeuf, B. J., 1884  
 Lebkuecher, J. G., 1073  
 Legendre, P., 1659  
 Levey, D. J., 1802  
 Li, C. Y., 583  
 Lindroth, R. L., 763  
 Linkins, A. E., 1586, 1594  
 Lively, C. M., 162  
 Lock, M. A., 653  
 Loik, M. E., 1722  
 Loiselle, B. A., 1733  
 Longino, J. T., 265  
 Lubin, Y., 1915

**M**

Maass, J. M., 130  
 Machado, J., 619  
 Maloney, S. K., 1204, 2450  
 Manseau, M., 2045  
 Mariotti, A., 1713  
 Marks, S., 1767  
 Martinelli, L. A., 643  
 Martinez, N. D., 252  
 Martinez Gomez, J. E., 367  
 Matelson, T. J., 265  
 Mathis, A., 2395  
 Matlack, G. R., 1559  
 Matson, P. A., 130, 1615  
 Mauricio, R., 2066  
 McClaugherty, C. A., 1586  
 McCorcle, M. D., 2303  
 McGrady, J., 207  
 McLarnes, P. F., 467  
 McKinley, V., 653  
 Menkens, G. E., Jr., 2164  
 Merino, J., 152  
 Mesterton-Gibbons, M., 2467  
 Meyer, G. A., 1101, 1117  
 Miao, S., 104  
 Milbrath, L. R., 1384  
 Miller, M. C., 653  
 Miller, R. M., 561  
 Milton, S. J., 390  
 Mitchell-Olds, T., 1638  
 Mittelbach, G. G., 2381  
 Moller, B., 653  
 Molofsky, J., 261

Moore, T. R., 2240

Morand, S., 2444  
 Moreno, E., 2037  
 Moriarty, D. J., 1475  
 Morin, P. J., 174  
 Morris, W. F., 493  
 Morse, D. H., 427  
 Morton, R. D., 1347  
 Mosier, A., 1579  
 Mueller-Dombois, D., 1012  
 Mulholland, P. J., 1264  
 Mumme, R. L., 623  
 Mustart, P. J., 1490

**N**

Nadeau, M. T., 879  
 Nadkarni, N. M., 265  
 Nagy, K. A., 390  
 Naiman, R. J., 467  
 Nash, T. H., III, 2465  
 Newman, J. A., 999  
 Niering, W. A., 96  
 Niewiarowski, P. H., 1992  
 Nilsson, J., 244  
 Nobel, P. S., 1722  
 Nolan, V., Jr., 1183  
 Nowlis, J. P., 1959  
 Nylin, S., 1414

**O**

O'Malley, R., 252  
 Ohsaki, N., 20  
 Olmstead, K. L., 1394  
 Osawa, A., 1020  
 Osenberg, C. W., 2381  
 Ostfeld, R. S., 1792

**P**

Pace, M. L., 1234  
 Page, L. M., 252  
 Palmer, M. W., 2215  
 Pantastico-Caldas, M., 2192  
 Parke, J. L., 840  
 Pastor, J., 467, 513, 2315  
 Paton, D. C., 1173  
 Patten, B. C., 252  
 Paul, V. J., 879  
 Pearman, P. B., 1982  
 Peckarsky, B. L., 1836  
 Peckol, P., 1757  
 Pennings, S. C., 879  
 Penton, M. A., 1836  
 Perry, R., 1929  
 Peterson, B. J., 653, 2315  
 Pierce, R. J., 583  
 Pimm, S. L., 252  
 Platz, C. L., 763  
 Podolsky, R. D., 2255  
 Pointier, J., 2444  
 Polis, G. A., 252  
 Porter, J. H., 2436  
 Potvin, C., 1615, 1617, 1674  
 Poulsen, T. L., 1373  
 Pugnaire, F. I., 124  
 Pulliam, H. R., 734, 977

**R**

Raimondi, P. T., 162  
 Raivio, S., 714

- Rambal, S., 570  
 Raulston, J. R., 2303  
 Rausher, M. D., 20  
 Rayburn, L., 1586  
 Reichardt, P. B., 2072  
 Reichman, O. J., 1281  
 Rejmánek, M., 252  
 Repert, D., 1586  
 Reznick, D., 2011  
 Rice, C. W., 855  
 Rice, K. J., 68  
 Richards, J. H., 481  
 Riley, R., 130  
 Ritke, M. E., 623  
 Robertson, P. A., 1313  
 Robinson, J. F., 2303  
 Roff, D. A., 1129, 1617  
 Rogers, C. M., 419, 1183  
 Roosenburg, W., 1992  
 Root, R. B., 1117  
 Rosemond, A. D., 1264  
 Ross, C. L., 433  
 Roughgarden, J., 1216  
 Roulet, N. T., 2240  
 Rousi, M., 30  
 Ruckelshaus, M. H., 904  
 Rudstam, L. G., 303  
 Running, S. W., 792  
 Rusch, D. H., 2020  
 Russell, R. W., 1173
- S**
- Sagers, C. L., 615  
 Salcedo, I. H., 140  
 Sallabanks, R., 1326  
 Sampaio, E. V. S. B., 140  
 Sanford, R. L., Jr., 140  
 Sato, K., 1538  
 Schallenberg, M., 919  
 Schardt, J. C., 2085  
 Schieck, J. O., 743  
 Schimel, D. S., 549  
 Schlesinger, W. H., 2465  
 Schluter, D., 699  
 Schoener, T. W., 252  
 Schoenly, K., 252  
 Schugart, H. H., Jr., 792  
 Schwarzkopf, L., 1970  
 Seastedt, T. R., 549, 1281  
 Semlitsch, R. D., 342  
 Sexton, O. J., 528  
 Shaw, R. G., 1638  
 Sherman, P. W., 2168  
 Shipley, B., 1693  
 Shipley, L. A., 778  
 Shoemaker, V. H., 1204, 2450  
 Showers, W. B., 2303  
 Shure, D. J., 55  
 Siegfried, W. R., 390
- Simms, E. L., 20  
 Sinsabaugh, R. L., 1586, 1594  
 Small, R. J., 2020  
 Smallwood, P. D., 1826  
 Smith, J. N., 419  
 Smith, K. G., 1143  
 Smith, R. J., 2395  
 Snyder, M. C., 583  
 Solow, A. R., 962  
 Soluk, D. A., 219  
 Sork, V. L., 528  
 Spalinger, D. E., 778  
 Sprules, W. G., 252  
 Stamp, N. E., 1778  
 Stanton, M. L., 1052  
 Statland, L. B., 549  
 Stephen, F. M., 1143  
 Sterner, R. W., 2351  
 Stiles, E. W., 751  
 Stockhoff, B. A., 1939  
 Strauss, S. Y., 39  
 Strong, D. R., 1813  
 Sugg, P., 954  
 Suonen, J., 1197  
 Svensson, E., 244  
 Swank, W. T., 1551
- T**
- Tahvanainen, J., 30  
 Targett, N. M., 891  
 Tauber, C. A., 1384  
 Tauber, M. J., 1384  
 Teal, J. M., 252  
 Theodore, T. A., 2085  
 Théron, A., 2444  
 Thomas, S. C., 1529  
 Thompson, C. F., 1191  
 Tiebout, H. M., III, 405  
 Tiedje, J. M., 855, 1579  
 Tilman, D., 599, 2179  
 Tinkle, D. W., 2413  
 Townsend, L., 258  
 Travis, J., 183, 1615, 1629, 1674  
 Tremmel, D. C., 2114  
 Trexler, J. C., 1629  
 Turkington, R., 863
- U**
- Ulanowicz, R. E., 252  
 Uotila, I., 30  
 Urabe, J., 2337
- V**
- Van Buskirk, J., 1950  
 van Marken Lichtenbelt, W. D., 1157  
 Vander Wall, S. B., 1307  
 Vanni, M. J., 2361  
 Veloso, C., 2003
- Venable, D. L., 2192  
 Ventullo, R., 653  
 Vestal, J. R., 653  
 Victoria, R. L., 643  
 Vispo, C. R., 377  
 Vitousek, P. M., 130  
 Vogel, J. T., 1157  
 Volk, G., 653
- W**
- Wallendorf, M. J., 2303  
 Walters, K., 1475  
 Wang, D., 583  
 Warner, S. C., 183  
 Warren, P. H., 252  
 Warren, R. S., 96  
 Watterson, G. A., 238  
 Way, M. O., 2303  
 Wayne, P. M., 1500  
 Weathers, W. W., 367  
 Weider, L. J., 935  
 Weiland, T., 1586  
 Weissburg, M. J., 279, 1428  
 Welham, C. V., 1893  
 Werner, R. A., 2072  
 Wesselink, R. A., 1157  
 Westley, L. C., 2136  
 Westoby, M., 1092  
 Whitham, T. G., 2056, 2270, 2297  
 Wickman, P., 1414  
 Wiklund, C., 1414  
 Wilbur, H. M., 252  
 Williams, J. B., 390  
 Williams, K. S., 1143  
 Williams, S. L., 904  
 Williamson, C. E., 320  
 Wilson, L. A., 55  
 Wilson, R. P., 1285  
 Wilson, S. D., 599  
 Wissinger, S. A., 207  
 Witkowski, E. T., 501  
 Wootton, J. T., 195  
 Wunder, B. A., 778
- Y**
- Yang, A. P., 2011  
 Yates, J. L., 1757  
 Ydenberg, R. C., 1893  
 Yodzis, P., 252
- Z**
- Zak, D. R., 1579  
 Zammuto, R. M., 2168  
 Zangerl, A. R., 47  
 Zebyk, T. M., 982  
 Zeide, B., 1598  
 Zimmer-Faust, R. K., 1428

## KEY WORD INDEX

## A

- abiotic effects, 183  
 abiotic factors, 2361  
 abiotic regeneration stage requirements, 1490  
 abundance, 226  
*Abutilon theophrasti*, 2114  
*Acanthocephalus dirus*, 710  
*Accipiter cooperii*, 351  
*Acer negundo*, 798  
 acetylene reduction, 583  
 acidity, 183  
 acorn production, 528  
 activity-specific metabolic rates, 1285  
 adaptation, 673  
 adaptive radiation, 699  
 advection-diffusion model, 493  
 aeolian, 954  
*Aeshna*, 1950  
 age class estimation, 2168  
 age-specific fecundity, 433  
 age-specific foraging, 433  
 age-specific reproductive success, 2027  
 ageing, 1538  
 aggregation, 1929, 1959  
 agonistic behavior, 1373  
*Agrotis epsilon*, 2303  
*Aix sponsa*, 2027  
 Alaska, 2072  
*Alces*, 467  
 algae, 162, 879, 1264, 2326, 2351  
 algal evolution, 1246  
 alkaline phosphatase, 2279  
 allocation, 798, 2066  
 allochthonous, 919, 954  
 allometric theory, 1020  
 allometry, 390, 1234  
*Allonemobius fasciatus*, 1129  
 alpine plant, 1052  
 alpine tundra, 2085  
 alternative prey, 1197  
 alternative stable states, 1347  
*Amazilia saucerottei*, 405  
 Amazon River floodplain, 643  
 ambush predator, 1826  
*Ambystoma*, 342  
 American Kestrel, 367  
 American robins, 1326  
 Amphibia, 2405  
 amphibian, 342, 1982  
 amphibian communities, 183  
*Anabrus simplex*, 1406  
*Anagrus delicatus*, 1813  
 analysis of ecological data, 1674  
 analysis of variance, 1615, 1638, 1646  
*Anaspidea*, 879  
 Anatidae, 2027  
 andromoneoecy, 2255  
*Andropogon*, 561  
*Andropogon gerardii*, 549, 1281  
 annual grass, 2161  
 annual grassland, 68  
*Anolis*, 1216  
 Antarctica, 1204, 2450  
 anther position, 1059  
 anti-epiphyll leaf characteristics, 619  
 antifungal defense, 751  
 antipredator, 2395

## antipredator behavior, 710, 726

- ants, 1384, 1802  
 Anura, 2405  
 anurans, 183  
 aphid, 1101, 1117, 1929  
 apical dominance, 39  
*Apis mellifera*, 493  
*Aralia nudicaulis*, 1700  
 Araneae, 1394, 1826  
 arboreal lizard population, 2465  
 Arctic, 2315  
*Arctostaphylos uva-ursi*, 751  
 arithmetical artifacts, 238  
 armored scale insects, 1081  
*Artemisia*, 612  
*Artemisia tridentata*, 481, 1516  
 arthropod dispersal, 954  
 arthropod fallout, 954  
 artificial diets, 442  
 artificial streams, 1836  
 asexual reproduction, 615, 2136  
 ash and cinder field, 2297  
 assembly rules for communities, 1347  
 associative nitrogen fixation, 583  
 Asteraceae, 2136  
 asymmetric competition, 174  
 asymptotic population growth rate, 1033  
 asynchronous hatching, 1191  
 atinalasic, 1246  
 Australia, 292, 1092, 1871  
 autochthonous, 919  
 autocorrelation, 1615  
 autotrophic energy sources, 643  
 average fitness, 1033  
 avian brood reduction, 367  
 avian guild, 419  
 avian nectarivores, 405

## B

- Bacillus cereus* UW85, 840  
 background plants, 2145  
 bacteria, 919, 1475, 2326  
 bacterial secondary production, 2326  
*Baetis*, 2315  
 balance, 2279  
 ballooning, 427  
*Banksia*, 501  
 barnacles, 162, 2430  
 barrens, 292  
 basal metabolic rate, 2003  
 Bayes factor, 962  
 beaver, 1297  
 beaver pond, 2240  
 behavioral ecology, 1826  
 behavioral flexibility and predator effects models, 219  
 behavioral indirect effects, 219  
 behavioral interference, 207  
 behavioral mechanism, 320  
 behavioral thermoregulation, 377  
 Belding's ground squirrel, 2168  
 belowground interactions, 561  
 benthic freshwater invertebrates, 207  
 benthic indirect effects, 219  
 benthos, 1475  
*Besleria triflora*, 2255  
 bet hedging, 1129

*Betula*, 826, 1500  
*Betula pendula*, 30  
*Betula pubescens*, 1136  
biased movement, 493  
binomial distribution, 1615, 1629  
biogeochemical cycling, 140  
biological control, 840  
bioluminescence, 258  
biomass, 1264  
biomass allocation, 1516  
biomass packing, 1020  
birch, 30, 1136, 2072  
birds, 390, 419  
birds in forest fragments, 714  
bite size, 778  
Black Tern, 1893  
blue crab, 1428  
Blue Tit, 244  
Blue-footed Booby, 2462  
body mass, 2027  
body size, 332, 627, 699  
bog, 2240  
*Bonasa umbellus*, 2020  
bootstrap, 1615, 1617, 2204  
boreal, 2240  
boreal forests, 467  
bottom-up, 944  
boundary layer, 1428  
*Brassica campestris*, 493  
*Brassica kaber*, 2145  
Brazil, 140  
breeding biology, 2462  
breeding experience, 2027  
breeding phenology, 174  
breeding systems, 1750  
British Columbia, 699  
brook stickleback, 2395  
brook trout, 673  
brown algae, 891  
browsing, 778, 1136  
browsing tolerance, 481  
bud-removal effects, 2136  
*Bufo americanus*, 1982  
*Bufo woodhousii*, 174  
bumble bee, 1059  
burglar alarm hypothesis, 258  
*Buteo galapagoensis*, 2462  
Bylot Island, Northwest Territories, Canada, 2045

## C

$C_3$ , 113  
 $C_4$ , 113  
 $C_4$  grasses, 643  
C:N ratios, 152  
C:N:P ratio, 2337  
Caatinga, 140  
*Caecidotea intermedius*, 710  
calicole vs. calcifuge, 1490  
calcium, 442  
California, 68, 124, 542  
California Sierra Nevada, 1173  
California, oak woodland, 2465  
calling site choice vs. absence-presence of competitors, 623  
Canonical Correspondence Analysis, 2215  
canopy architecture, 2114  
canopy competition, 1707  
canopy gaps, 1551  
carabid beetles, 1373  
carbon, 140, 1586

carbon cycle, 2240  
carbon dioxide, 763  
carbon isotope discrimination, 798, 1516  
carbon-13, 1713  
carbon-nutrient balance, 1757, 2072, 2261  
carbon-nutrient balance theory, 763  
Caribbean, 1216  
cascade model, 1216  
Cassidinae, 1394  
*Castanea dentata*, 982  
*Castor canadensis*, 1297  
caterpillar, 1778  
cave beetles, 1373  
Cedar Creek, Minnesota, 599  
cellular automata, 1538  
cellular simulation, 1707  
cellulase activity, 1594  
central place foraging, 1893  
cercopid, 1101, 1117  
Cervidae, 2279  
CH<sub>4</sub>, 2240  
*Chaetocnema*, 20  
Chamela, Mexico, 130  
*Chaoborus*, 2361  
chaos, 1362  
chaparral, 124  
character displacement, 627  
cheek pouches, 1307  
*Chelydra serpentina*, 332  
chemical alarm signals, 2395  
chemical communication, 1467  
chemical defense, 891, 1757  
chemistry, 47  
chemoreception, 1428  
*Chen caerulescens atlantica*, 2045  
chick provisioning, 2450  
Chile, 2003  
*Chlidonias nigra*, 1893  
chlorophyll fluorescence, 1073  
*Chlorostilbon canivetii*, 405  
choice of calling sites, 623  
choice of oviposition sites, 623  
*Choristoneura occidentalis*, 442  
chorus attendance vs. mating success, 623  
chronic herbivory, 2056  
chronosequence, 1012  
chrysomelid, 1101, 1117  
*Chrysomelidae*, 1394, 2056  
*Chrysopa*, 1384  
cicada mortality, 1143  
Cisco, 303  
Cladocera, 935  
clam, 1428  
cleistogamous reproduction, 2161  
climate change, 1052  
climatic variation, 826  
climatology, 1722  
climax communities, 1347  
clipping, 863  
clonal plant, 1700  
clonal variation, 542  
clone, 1467  
clutch and egg size vs. female size, 1455  
clutch biomass, 427  
clutch predation, 743  
clutch size, 244, 2413  
coadaptation, 1414  
coastal California plant communities, 1567  
*Coccinella 7-punctata*, 1929  
coexistence, 2192  
cohort life table, 2168

- cohorts, 2164  
cold acclimation, 1722  
Coleoptera, 1394  
colluvial sands vs. limestone soils, 1490  
coloniality, 2462  
colonization, 954, 977, 2020, 2179  
colonization cycle, 2315  
colonization of small habitat fragments, 714  
Columbian ground squirrels, 2164  
common garden, 1183  
communities, 1767  
community ecology, 1347, 1475, 1847  
community rate, 1234  
community response to nutrient amendments, 2085  
community structure, 162, 320, 405, 627, 653, 863, 1234, 1856, 2270, 2361  
comparative energetics, 405  
comparative methods, 1092  
comparing diallel experiments, 1693  
compensatory feeding, 1939  
compensatory growth, 481, 1136  
competition, 1, 9, 83, 561, 599, 627, 863, 1767, 1856, 1950, 1982, 2114, 2361  
competition among larval anurans, 174  
competition between liverworts and lichen, 619  
competition for water vs. nutrients or light, 501  
competition matrix, 1693  
competition-induced biomass wave, 1281  
competitive effect, 68  
competitive equivalence, 68  
competitive hierarchies, 195  
competitive neighborhood, 68  
complementary resources, 879  
complex life cycle, 2405  
compositional analysis, 1313  
concentrated herbivory, 2066  
condition index, 1157  
coniferous forest, 1197  
conservation ecology, 714  
conspecific interactions, 1826  
constraint, 279  
contingency model, 1297  
contour, 1659  
Cooper's Hawk, 351  
copepods, 258  
*Coreopsis*, 561  
cost of fruiting, 1033  
cost of reproduction, 673, 1884, 1970  
Costa Rica, 265, 1733, 1802, 2125  
costs of resistance, 20  
cottonwood, 2056  
courtship feeding, 1406  
Coweta, 1551  
crab spider, 427  
*Crataegus monogyna*, 1326  
critical height difference, 1538  
crowding effects, 1950  
crown structure, 1598  
crown unit, 1598  
*Culaea inconstans*, 2395  
curve fitting, 1629  
cutin, 152  
*Cymphoma gibbosum*, 1959
- D
- $\delta^{13}\text{C}$  enrichment with soil depth, 1713  
daily energy expenditure, 1157, 1893  
Dalhousie Basin, South Australia, 1847  
damping-off, 840
- Daphnia*, 303, 935, 1467, 2337, 2361, 2381  
*Daphnia magna*, 1455  
dasyurids, 1871  
data base, 252  
*Datura stramonium*, 2114  
de Wit replacement series, 1693  
decision cues, 1326  
decisions among shrubs, 1326  
decomposition, 152, 1586  
deep drainage, 570  
defaunation, 2297  
defense, 1394  
defense costs, 9  
defensive behavior, 1384  
defoliation, 1092, 1101, 1117, 1136, 2072  
deforestation, 140  
dehesa, 570  
delayed inducible resistance, 2072  
*Deloyala*, 20  
demography, 816, 1444, 1884, 1970, 2164, 2413, 2467  
denitrification, 130, 855, 1579  
density, 2413  
density arrays, 2145  
density dependence, 1362, 1792, 1950, 2145, 2192  
*Depressaria*, 47  
desert, 390, 1307  
desert annuals, 816, 2192  
desert spider, 1915  
desiccation tolerance, 1073  
design of field experiments, 1646  
design of observations, 252  
detection, 734  
detoxification, 47  
Detrended Correspondence Analysis, 2215  
detritivore, 643  
developmental constraint, 2405  
developmental plasticity, 481  
diapause, 1129  
*Diaptomus*, 2361  
diatoms, 1246  
diet heterogeneity, 1939  
diet quality, 2003  
diffuse selection, 20  
digestive constraint, 2045  
digestive physiological ecology, 2003  
dinoflagellates, 258  
dioecious tree, 798  
dioecy, 1529  
*Dipodomys merriami*, 1307  
disc equation, 778  
discrete dependent variable, 1629  
discriminant analysis, 840  
discriminant function analysis, 1191  
dispersal, 427, 1153, 1362, 1915, 2020, 2436  
dispersal distance, 2430  
dispersed herbivory, 2066  
displacement, 1183  
distribution, 47, 226  
distribution patterns, 2444  
distribution-free statistical methods, 1615, 1617  
disturbance, 83, 195, 226, 599, 863, 982, 999, 1551  
disturbance history, 1559  
diversity, 2179  
divided attention, 1337  
*Dolabella auricularia*, 879  
doubly labeled water, 390, 1157, 1285  
dragonflies, 207, 1950  
drift paradox, 2315  
drought, 68, 501, 1551  
drought deciduous, 130  
dry deposition, 583

dynamic state variable model, 351  
dynamical systems, 1347

## E

early- and late-successional species, 104  
eastern fence lizard, 1992  
eastern hemlock, 513  
ecological rate, 1234  
ecological scaling, 714  
ecomorphology, 627, 2037  
ecosystem process model, 792  
ecosystem responses, 653  
ECOWeB, 1216  
ectomycorrhizae, 2297  
edge effect, 1982  
edge effects, 1281  
effects of leaf damage, 2066  
efficiency-maximizing, 1893  
egg mass, 244  
egg parasitoid, 1813  
egg resorption, 433  
egg size, 1455  
egg-laying date, 244  
eigenvalues, 2204  
elasticity, 2467  
elevated CO<sub>2</sub> levels, 104  
*Elmia*, 1264  
endophytes, 1767  
energetics, 377, 390, 1157  
energy, 1337, 1893  
energy allocation, 1157  
energy budget, 390, 1157  
energy constraints, 244  
energy cost of reproduction, 2450  
energy flow, 252  
energy gain, 1871  
energy maximization, 279  
energy storage strategy, 419  
enhancement, 104  
environmental gradient, 863, 1052, 1646  
environmental release of microorganisms, 840  
environmental variation, 542  
enzyme activity, 1586  
Ephemeroptera, 219  
epilithic, 2326  
epiphyll colonization of rainforest leaves, 619  
epiphyll colonization vs. leaf lifetime, 619  
epiphytes, 904  
epiphytism, 265  
*Eriophorum*, 2045  
*Erythemis*, 207  
*Eulampus tympanum*, 1970  
Euphorbiaceae, 1529  
eutrophication, 904  
evapotranspiration, 570  
exclosures, 467  
experimental design, 1615  
experimental manipulation, 332  
exploitation, 1373  
extinction, 2179

## F

facilitation, 219, 1567  
Fagaceae, 528  
*Falco sparverius*, 367  
fallen epiphyte longevity, 265  
fat deposition, 1173  
fat storage vs. predictability of resources, 419  
fathead minnows, 2395

fecundity, 433, 673, 1836, 1970, 2192  
feeding behavior, 279, 1384, 1939  
feeding constraint, 2045  
feeding matrix, 252  
feeding postures, 2037  
feeding rates, 1836  
feeding regime sequence, 1939  
feeding trials, 763  
fen, 2240  
fertility, 599  
fertilization, 30, 863  
field experiment, 207, 261, 427, 1826, 2045, 2145  
field metabolic rate, 1157, 1285, 2450  
field reciprocal transplants, 1490  
field studies, 2098  
field trial, 501  
fire, 140, 982, 1567, 2179  
fire history, 1559  
fire in sclerophyll scrub, 501  
fire scar, 1559  
fireweed, 1929  
fish, 303, 653, 1847, 1856  
fish ecology, 685  
fitness, 427, 673, 1836, 1982  
fitness gain curves, 1750  
fitness payoff, 427  
flexible life history, 2136  
flight cost, 1285  
flight speed, 1893  
flooded forest, 643  
floral constancy, 2145  
floral evolution, 1059  
flower morphology, 2255  
flowering, 1529  
flowering phenology, 959  
fluctuating populations, 2164  
flume, 1428  
food compensation, 2045  
food quality, 2045  
food web, 238, 252, 467, 1216, 1347  
food web models, 238  
food web scale invariance, 238  
foraging, 258, 427, 734, 778, 1337  
foraging behavior, 1813  
foraging currencies, 1893  
foraging ecology, 1959  
foraging efficiency, 699, 2450  
foraging energetics, 1373  
foraging microhabitat, 1871  
foraging site selection vs. predation risk, 1197  
foraging theory, 879  
forbs, 96  
forest, 55, 792, 1713  
forest dynamics, 1012  
forest floor, 1594  
forest simulator, 1707  
fractal basin boundaries, 1362  
fractal dimension, 1598  
France, 1713  
frugivory, 1326  
fruit abundance, 1326  
fruit pulpisness, 1326  
fruit rot, 751  
fruit size, 1326  
*Fucus vesiculosus*, 1757  
fuel reserves, 1173  
functional gender, 2255  
functional response, 778, 1297  
fungal rot, 1559  
fungi, 1767  
furanocoumarins, 47

future survival vs. mating success, 1884  
fybos, 1490

**G**

Galápagos Hawk, 2462  
gap dynamics, 1500, 1733  
gap model, 792  
gap recovery, 195  
gap vs. understory predation, 261  
gap vs. understory survival, 261  
gaps, 55, 999  
*Gaultheria procumbens*, 751  
*Gaylussacia frondosa*, 751  
gene flow, 493  
generalist, 1778  
genetic differences in nectar production, 542  
genetic polymorphism, 1467  
geographic information systems, 1567  
geographic patterns, 1856  
geographic variation, 1183, 1992  
geometric distribution, 2436  
geostatistics, 612  
germination, 83, 501  
*Glaucidium passerinum*, 1197  
global change, 763  
*Glycine max*, 840  
gorgonian corals, 1959  
Gradient Analysis, 2215  
gradients, 1615, 1659  
granivory, 1307  
grasses, 570, 1767  
grassland, 113, 549, 2179  
gray squirrel, 1313  
grazing, 653, 778, 919, 1234, 1264, 1567, 1959, 2337  
Great Basin-sagebrush steppe, 481  
greenhouse gas, 130  
ground squirrels, 377, 2168  
grouped experimental units, 1646  
growth, 342, 798, 1970, 1982, 2011, 2413  
growth and food utilization, 1939  
growth rate, 673, 1836, 1992  
growth rate vs. habitat condition, 261  
guild dynamics, 405  
guilds, 627  
Gulf of California, 162  
gypsy moth, 1559, 1939

**H**

habitat, 1959  
habitat fragmentation, 714  
habitat heterogeneity, 816  
habitat quality, 2045  
habitat selection, 685, 699, 1915  
habitat size, 1982  
habitat structure, 292  
habitat use, 1313  
*Hakea*, 501  
handling time, 778  
hare, 30  
harvester ants, 2231  
hatching asynchrony, 244  
hatchlings, 332  
Hawaii, 1012  
hawthorn, 1326  
*Helianthus tuberosus*, 2136  
hemlock, 982  
herbivore, 1, 643, 2351  
herbivore abundance, 1081  
herbivore distribution, 1081  
herbivorous lizard, 1157

herbivory, 9, 20, 39, 47, 55, 83, 292, 390, 455, 467, 778, 879, 891, 1101, 1117, 1136, 1264, 1767, 1778, 1792, 1939, 2003, 2066, 2270  
herbivory tolerance, 481  
Heteroptera, 1394  
heterostyly, 1059  
hierarchical decisions, 1326  
hierarchies, 1693  
High Arctic, 2045  
hindlimb, 2037  
*Hippodamia variegata*, 1929  
Holocene vegetation patterns, 826  
*Hoplias*, 1856  
host quality, 1959  
host shifting, 2056  
host-parasitoid interactions, 1813  
House Wren, 1191  
Hubbard Brook, 583  
hummingbirds, 405, 1173  
hybrid sink, 2056  
hybridization, 2056  
hybrids, 935  
hydrodynamics, 1428  
hydrological equilibrium, 570  
*Hyla chrysoscelis*, 623  
*Hyla crucifer*, 174  
*Hyla femoralis*, 183  
*Hyla gratiosa*, 183  
hypothesis-testing, 962

**I**

ideal free distribution, 226  
*Idotea resecata*, 904  
*Iguana iguana*, 1157  
Illinois, 1191  
immobilization, 1579  
inadequate measures of calling site preference, 623  
inadequate measures of oviposition site preference, 623  
inbreeding avoidance, 1153  
indices, 1246  
indirect effects, 207, 726, 944, 1475, 2337, 2381  
individual fitness, 959  
individual life history variation, 1129  
individual variation, 542  
induced chemical defense, 2072  
induced resistance, 1, 9, 20  
induced response, 1757  
inducible defenses, 20  
induction, 1778  
information processing, 1337  
inhibition succession, 195  
insect damage, 1101, 1117  
insect feeding guilds, 39  
insect impact, 1101, 1117  
insect population dynamics, 1143  
insect population losses due to avian predation, 1143  
insect-plant interactions, 1778  
Insecta, 1384  
insectivores, 1871  
insects, 1767  
intake rate, 778  
interaction of biotic and abiotic factors, 183  
interactions, 863, 1767  
interference, 219, 1373, 1813, 1950  
interference competition, 207  
intermountain West, 798  
interspecific competition, 174, 183, 405, 1197, 2192, 2270  
interspecific interaction, 252  
interspecific variation, 1384  
intertidal communities, 195

intraguild predation, 207  
 intransitive competition, 195  
 intraspecific competition, 183, 405, 1373, 2192  
 intraspecific variation, 1012  
 invasion, 83, 999  
 invertebrate predation, 320  
 invertebrates, 653  
*Ipomoea*, 20  
*Ipomopsis aggregata*, 1043  
 iridoid glycosides, 1778  
 island biogeography, 977  
 Isle Royale, Michigan, 467, 1950  
 isolation effects, 977  
 isopod, 710  
 isotope mixing model, 2315  
 isotopic indicators, 2098

## J

JABOWA, 1707  
 jackknife, 1615, 1617  
 Jordan Rift Valley, 816  
 junco, 1183  
*Juncus gerardi*, 96  
*Junonia coenia*, 1778  
 juvenile dispersal, 2430

## K

Kansas, 113, 549, 1281  
 katydid, 1406  
 kelp forests, 292  
 keystone process, 1792  
 Konza Prairie, 855, 1281  
 Kuparuk River, 2315

## L

La Selva Biological Station, 1802  
 lady beetles, 1929  
*Lagopus lagopus*, 743  
 Lake Mendota, 303  
 lakes, 935, 944  
 land restoration, 583  
 landscape, 549  
 landscape ecology, 513, 826, 1567  
 landscape heterogeneity, 714  
*Larus glaucescens*, 195  
 larval ecology, 2405  
 larval shield, 1394  
 latitudinal variation, 1246  
*Latrodectus revivensis*, 1915  
 lattice model, 1538  
 leaf age, 2066  
 leaf area, 1598  
 leaf area index, 792  
 leaf area vs. species, 261  
 leaf expansion, 455  
 leaf mass density, 1020  
 leaf nitrogen, 615  
 leaf phenology, 455  
 leaf rooting, 615  
 leaf toughness, 152  
 Lepidoptera, 433, 1414, 2303  
*Lepomis*, 2381  
*Lepus timidus*, 30  
 Lesser Antilles, 1216  
 lethal temperatures, 226  
 life history, 419, 433, 673, 935, 1414, 1455, 1884, 1992, 2413  
 life table analyses, 2168  
 life tables, 2164  
 life-history evolutions, 2164

life-span, 1677  
 light, 104, 599, 1733  
 light competition, 1707  
 light penetration, 2114  
 lignin, 152  
 limnology, 919  
 limpets, 162  
 link strength, 1216  
 lipids, 1183  
 litter, 152  
 litter decomposition, 1594  
 litterfall, 2465  
 liverwort cover vs. rainfall, 619  
 lizard, 2413, 2465  
 lizardfall, 2465  
 local adaptation, 1467  
 local asymptotic stability, 1347  
 local extinction/recolonization, 714  
 local interaction, 1700  
 locally weighted regression, 1615, 1629  
 log-odds ratio, 1629  
 logging, 977  
 logistic, 1362  
 logistic regression, 1615, 1629  
 long-range transport, 2303  
 long-term competition, 513  
 long-term field study, 162  
 long-term prediction of sea-surface temperatures, 1677  
 long-term vegetation dynamics, 982  
 Lotka-Volterra dynamics, 1347  
 LOWESS regression, 1629  
*Lymantria dispar*, 763, 1939

## M

macrobenthos, 919  
*Magicicada*, 1143  
 magnesium, 442  
*Malacosoma disstria*, 763  
 Malathion, 1767  
 Malaysia, 1529  
 male function, 2255  
 male life table, 1884  
 male mortality, 1884  
 male-female pairing probability, 2444  
 mammal, 778, 1871  
 mammalian ecology, 1153  
 mammalian predators vs. plant species, 261  
 mammalian resistance, 30  
 Mammoth Cave, Kentucky, 1373  
 Manitoba, Canada, 1700  
 Mantel test, 1659  
 mapping, 1659  
 maps of variables, 1659  
 marine, 919  
 marine larvae, 2430  
 marine mammals, 1444  
 mark-release-recapture, 2303  
 Markov point process, 1700  
 Markovian models, 1347, 1567  
 marsh, 2240  
 marsh accretion, 96  
 marsh vegetation, 96  
 marsupials, 1871  
 Maryland, 1081  
 mass gain, 1173  
 mass-balance, 583  
*Massospora*, 1143  
 mast-fruiting, 528  
 masting, 528  
 mate desertion, 351

- mate-influenced host preferences, 1959  
 maternal effect, 427  
 mathematical models, 726  
 mating opportunities, 1959  
 matrix mapping, 1659  
 matrix model, 1033  
 matrix population models, 1444  
*Matsucoccus acalyptus*, 2297  
 maturation, 1455  
 maxima, 1677  
 maximizing energy intake, 1337  
 mayflies, 1836, 2315  
 measurement units, 1598  
 mechanisms of competition, 405  
 Mediterranean ecosystem, 152  
 mediterranean oak woodlands, 570  
 mediterranean shrubs, 124  
 meiofauna, 1475  
*Melastomataceae*, 1733  
*Melissodes apicata*, 1059  
 Merriam's kangaroo rat, 1307  
 mesocosms, 183  
 mesoherbivores, 904  
 meta-analysis, 2270  
 metabolic rate, 405  
 metamorphosis, 342, 2405  
 methane, 2240  
 methodology of food webs, 252  
*Metrosideros polymorpha*, 1012  
 Michigan, 826, 2381  
*Miconia*, 1802  
 microalgae, 1475  
 microbial activity, 653  
 microbial biomass, 855, 1579  
 microbial communities, 840  
 microbial ecology, 840  
 microclimate, 377  
 microhabitat use, 685  
*Microtus*, 1153  
*Microtus agrestis*, 30  
*Microtus pennsylvanicus*, 1792  
 migration, 1173  
 migratory stopover, 1173  
 mineralization, 130, 919  
 minerals, 442  
 minima, 1677  
*Mirabilis multiflora*, 542  
*Mirounga angustirostris*, 1884  
 missing cells, 1638  
 missing responses to treatment, 1638  
 Missouri, USA, 528  
*Misumena*, 427  
 mixed diet, 879  
 mixed-oak forests, 1551  
 mode of reproduction, 2125  
 modeling, 792, 1700  
 models, 1362  
 Monte Carlo tests, 1693  
 moose, 467, 2261  
 morphological constraint, 481, 1871  
 morphological space, 627  
 morphological units, 1598  
 morphology, 2037, 2114  
 morphology–ecology correlation, 699  
 mortality, 2020, 2164  
 motion analysis, 1428  
 Mount St. Helens, 954  
 movement models, 2436  
 movement patterns, 1959  
 multiple generation bioassay, 442  
 multiple hypothesis testing, 1959  
 multivariate, 2204  
 mussels, 162  
 mutualist, 2297  
 mycorrhizal fungus colonization, 561  
 myology, 2037  
 myrmecochory, 1802  
*Myrmeleontidae*, 226  
*Mytilus californianus*, 195
- N
- <sup>15</sup>N, 130, 2098, 2315  
 natural and anthropogenic disturbances, 982  
 natural enemies, 1081, 1394  
 natural selection, 332  
 near-surface airflow, 2303  
 nectar production, 542, 1043  
 nectar sugar concentration, 542  
 nectar volume, 542  
 Negev desert, 1915  
 neighbor effects, 2114  
 neighbor interactions, 561  
 neighborhood crowding index, 1707  
 neighborhood interactions, 2192  
 neighborhood modelling, 1707  
 neotropical forest canopy, 265  
 neotropical hummingbirds, 405  
 neotropical shrub, 615  
 neotropics, 615  
 nest concealment, 743  
 nest site, 427  
 nest spacing, 743  
 nested subset, 1847  
 nestling age, 1191  
 nestling mass, 1191  
 net carbon assimilation, 798  
 net photosynthesis, 1516  
 net primary production, 549  
 Neuroptera, 226  
 neutral association, 513  
 Nevada, 1307  
 New England, 982  
 Newfoundland, 673  
 niche breadth, 935  
 niche shift, 1197  
 nitrate, 855  
 nitric oxide, 130  
 nitrification, 130, 1579, 2098  
 nitrogen, 124, 140, 599, 855, 1264, 1586, 1778, 2085, 2098,  
     2337, 2351  
 nitrogen addition, 2179  
 nitrogen assimilation, 2045  
 nitrogen availability, 2098  
 nitrogen cycle, 130  
 nitrogen cycling, 467, 1579, 2098  
 nitrogen limitation, 904  
 nitrogen mineralization, 467, 2098  
 nitrogen volatilization, 583  
 nitrous oxide, 130, 855  
 non-additive interactions, 219  
 nonbreeding fitness, 1183  
 nonbreeding period, 419  
 nonlinear effects, 726  
 nonsteady state, 113  
 North America, 1246  
 northern elephant seal, 1884  
 northern Germany, 1455  
*Nothofagus solandri*, 1020  
 null model, 1693  
 nutrient assimilation, 891  
 nutrient cycling, 265, 2337

nutrient input, 954  
 nutrient level, 863  
 nutrient limitation, 1264, 2085  
 nutrient loss, 140  
 nutrient metabolizability, 2045  
 nutrient resorption, 124  
 nutrients, 104  
 nutrition, 1406, 2351  
 nutritional ecology, 442  
 nutritional indices, 763  
 nutritional niche, 442  
*Nyctaginaceae*, 542

## O

oak woodland, 2465  
 oaks, 528, 826, 1559  
 ocean temperature, 1677  
*Octodon degus*, 2003  
*Odocoileus virginianus*, 2279  
 Odonata, 1950  
 offspring quality, 244  
 offspring size, 2011  
 Ohio, 1153  
 old field succession, 1792  
 old fields, 599  
 old growth, 513  
 old-field annuals, 2114  
 olfaction, 1428  
 onset of incubation, 244  
 Ontario, Canada, 1297, 2240  
 Opistobranchia, 879  
 optimal behavior, 726  
 optimal body size, 2405  
 optimal fat hypothesis, 419  
 optimal foraging, 279, 377, 1297, 1826, 1893, 2261  
 optimization models, 635  
*Opuntia fragilis*, 1722  
 Orchidaceae, 1033  
*Orcinus orca*, 1444  
 ordination, 2204, 2215  
 organic matter, 919  
 organic matter losses, 583  
 osmotic pressure, 1722  
 osteology, 2037  
 Ostrich, 390  
 overcompensation, 1136  
 overdispersion, 743  
 oviposition preference, 1959  
 oviposition site choice vs. absence-presence of competitors, 623

## P

paedomorphosis, 342  
 pairwise selection, 20  
 paleoecology, 826  
 paleolimnology, 1246  
 Panama, 261, 455, 615, 619  
*Pararge aegeria*, 1414  
 parasite transmission, 710, 2444  
 parasite-host relationship, 710  
 parental investment, 351, 1406  
 parsnip webworm, 47  
 partial differential equation, 493  
 partial regression analysis, 1659  
*Parus*, 2037  
*Parus caeruleus*, 244  
*Parus cristatus*, 1197  
*Parus montanus*, 1197  
*Pastinaca*, 47  
 patch dynamics, 55, 513

patch selection, 279  
 patch-use, 2261  
 patches, 1615, 1646, 1659  
 pathogenic fungi, 2231  
 pattern of leaf damage, 2066  
 peatlands, 2240  
*Pectocarya recurvata*, 2192  
 penguin, 1204  
 percentage increase, 104  
 perception, 734  
 perfect flower, 2255  
 periodical cicada, 1143  
 periphyton, 643, 1246, 1264  
 permanence, 1347  
 pH, 2361  
*Pheidole*, 1802  
 phenolics, 55  
 phenological sink, 2056  
 phenology, 68, 1052, 1129, 1143, 1516  
 phenols, 2072  
 phenotypic plasticity, 1129, 1384, 1455, 1467, 2405  
 phenotypic variation, 332  
 phlorotannins, 891  
 phosphorus, 124, 140, 442, 1264, 1586, 2085, 2279, 2337, 2351  
 photoinhibitory damage, 1073  
 photosynthesis, 113, 615, 2085  
 photosystem II electron transport, 1073  
 phototaxis, 1467  
 phylogenetically independent contrasts, 1092  
 phylogeny, 1092  
 physicochemical, 1246  
 physiology, 1204  
 phytoplankton, 643, 2337  
*Pimephales promelas*, 2395  
 Pine Barrens, 1559  
 pinnipeds, 1884  
*Pinus*, 826, 1559  
*Pinus contorta*, 792  
*Pinus densiflora*, 1020  
*Pinus edulis*, 2270, 2297  
*Piper*, 2125  
 pixel, 1707  
 planktivory, 303  
 plant, 643  
 plant allocation, 1101  
 plant allometry, 1020  
 plant biomass, 1281  
 plant competition, 1136, 1693  
 plant defenses, 20, 55  
 plant density, 1020  
 plant fitness, 9, 39, 2066  
 plant fragments, 2125  
 plant genetics, 2270  
 plant geometry, 1020  
 plant growth analysis, 1101  
 plant reproduction, 1117, 1750  
 plant roots, 840  
 plant size, 959  
 plant spacing, 2145  
 plant uptake, 1579  
 plant water potential, 1081  
 plant-animal interaction, 778, 1136  
 plant-herbivore interaction, 481, 891, 1757  
 plant-insect interactions, 1, 39, 763, 1778  
 plant-plant interactions, 1136  
*Plantago lanceolata*, 1778  
*Plantago patagonica*, 2192  
 planthopper, 1813  
 plasticity, 1052, 2011  
 Plecoptera, 219

- pocket gopher excavation activity, 1281  
 pocket gophers, 1281  
*Poecilia*, 1856  
*Poecilia reticulata*, 2011  
 Poisson process, 962  
 pollen analysis, 982  
 pollen deposition, 493  
 pollen dispersal, 493, 2255  
 pollen limitation, 959, 1043  
 pollen removal, 1059  
 pollen-based vegetation reconstruction, 826  
*Pollicipes polymerus*, 195  
 pollination, 2145  
 pollination frequency and intensity, 1033  
 pollinator quality, 2145  
 pollinator specialization, 1059  
*Polygonum pensylvanicum*, 2114  
 polyphagy, 1939  
 polyphenolics, 891, 1757  
 pond size, 1982  
 ponds, 207  
*Pontederia cordata*, 1059  
 pool dilution, 130  
 poplar, 2056  
 population biology, 1020, 2465  
 population dynamics, 816, 1033, 2444  
 population growth rate, 1444  
 population limitation, 419  
 population overlap, 320  
 population regulation, 1950  
 population size structure, 1455  
 power cost, 1285  
 prairie, 2179  
 pre- vs. post-settlement vegetation, 982  
 predation, 162, 332, 342, 726, 734, 1384, 1394, 1428, 1475,  
     2361, 2381, 2462  
 predation frequency, 1216  
 predation pressure, 1455  
 predation risk, 419, 2027  
 predation risk model, 320  
 predator, 643  
 predator avoidance, 1836  
 predator behavior, 1929  
 predator body size vs. prey size, 1871  
 predator satiation, 528, 1143  
 predator-prey, 258, 1826  
 predator-prey interaction, 219, 1929  
 predator-prey ratios, 238  
 predisposal, 1551  
 preference, 879  
 prey abundance, 226  
 prey density vs. predator interaction, 219  
 prey detection, 1337  
 prey encounter, 1871  
 prey specificity, 1384  
 prey taken vs. gape size and biting force, 1871  
 primary production, 763, 2085, 2326  
 primary succession, 954, 1012  
 principal components analysis, 2204  
 priority effects, 174  
 probability distribution of extreme values, 1677  
 productivity, 792, 1264, 2179  
 productivity and phytochemistry vs. increased CO<sub>2</sub>, 763  
*Prokelisia marginata*, 1813  
 protandry, 1414  
 Proteaceae, 1490  
 protein, 1778, 1939, 2351  
 protists, 1475  
*Pseudacris crucifer*, 2405  
*Pseudaulacaspis pentagona*, 1081  
*Pseudoroegneria*, 612
- Psychotria horizontalis*, 615  
*Purshia tridentata*, 481  
 Pygmy Owl, 1197  
*Pygoscelis adeliae*, 1204, 2450
- Q
- Quercus*, 826, 1559  
*Quercus alba*, 528, 792  
*Quercus douglasii*, 68, 2465  
*Quercus ilex*, 570  
*Quercus rubra*, 528  
*Quercus suber*, 570  
*Quercus velutina*, 528
- R
- radiotelemetry, 1313  
 rain forest, 1012  
 rainfall, 226  
 rainfall fluctuations, 816  
 ramet, 1700  
*Rana clamitans*, 1982  
 random food-web models, 238  
 randomization, 1615, 1617  
 randomization tests, 1444, 2270  
 rank tests, 1615, 1617  
*Ranunculus adoneus*, 1052  
*Raphanus sativus*, 2066  
 rate maximizing, 1893  
*Rattus rattus*, 2444  
 reciprocal association, 513  
 reciprocal transplant, 1992  
 recruitment, 292, 2430  
 refuge, 2381  
 refuge use, 342  
 refugia, 1813  
 regeneration, 2337  
 regeneration determinants of adult distribution, 1490  
 regional vs. local forest history, 982  
 regression, 1629  
 regulation, 1183  
 relative efficiency index, 1693  
 release rate, 2337  
 removal experiments, 2270  
 reproduction, 1455, 2011  
 reproductive effort, 673, 1970  
 reproductive success, 2255  
 requirements, 2279  
 resistant, 2297  
 resource allocation, 433, 528  
 resource allocation patterns, 481  
 resource availability, 1117, 1757, 2261  
 resource levels, 935  
 resource limitation, 1043  
 resource stress, 433  
 respiration, 792  
 respirometry, 1157  
 response surface experiment, 442  
 resting metabolic rate, 1157  
 restoration, 561  
 restricted seed dispersal, 2161  
 return times for extremes of a given magnitude, 1677  
 rhizosphere, 583, 840  
 Ring-necked Pheasant, 1313  
 risk of predation, 258  
 risk-sensitive foraging, 1826  
 risk-spreading, 1813  
 river, 1856  
*Rivulus*, 1856  
 rocky intertidal community, 162  
 root branching, 561

- root morphology, 68, 561  
 root radius, 561  
 roots, 612
- S  
 sagebrush-steppe, 612  
 salamander, 342  
 saline lakes, 1246  
 saliva, 1307  
 salt marsh, 96, 1813  
*Salvelinus fontinalis*, 673  
 sampling colonization, 714  
 sampling problems, 2430  
 saprophytic fungi, 2231  
 sapwood, 792  
*Satyrinae*, 1414  
 saw-toothed pattern, 1538  
 scale and heterogeneity, 612  
 scale of heterogeneity, 1646  
*Sceloporus graciosus*, 2413  
*Sceloporus occidentalis*, 2465  
*Sceloporus undulatus*, 1992  
*Schistosoma mansoni*, 2444  
 Schreckstoff, 2395  
 Scots pine, 2261  
 sculpin, 219  
 sea hare, 879  
 sea urchins, 292  
 sea-level rise, 96  
 seabird, 1204, 2450  
 search, 734  
 search patterns, 1337  
 seasonal change in maturation size, 1455  
 seasonal effects, 162  
 seasonality, 455, 1414  
 second-order spatial analysis, 1700  
 secondary chemistry, 751  
 secondary compounds, 47, 763  
 sediment supply, 96  
 seed and seedling distribution after fire, 501  
 seed and fruit set, 959  
 seed bank, 1802  
 seed decomposition, 2231  
 seed dispersal, 501, 751, 1802, 2270  
 seed dormancy, 1802  
 seed experiments, 2231  
 seed germination, 1733  
 seed predation, 1802, 2270  
 seed preference, 2231  
 seed regeneration, 2125  
 seed set, 1043  
 seed shadows, 2430  
 seed size, 501, 1052, 1092  
 seed survivorship, 2231  
 seedling carbon gain, 1500  
 seedling emergence vs. soil type, 1490  
 seedling establishment, 83, 1733  
 seedling growth, 104, 1733  
 seedling production per fruit, 1033  
 seedling shoot water potentials, 1490  
 seedling survival and growth, 261  
 seedling survivorship vs. soil type, 1490  
 seedlings, 1092, 1733  
 seeds, 1733  
*Selaginella lepidophylla*, 1073  
*Selasphorus rufus*, 1173  
 selectivity, 734, 879  
 self-thinning rule, 1020  
*Semotilus atromaculatus*, 710  
*Senecio vulgaris*, 999  
 senescence, 124, 615  
 sensitive dependence, 1362  
 sensitivity, 2467  
 sensitivity analysis, 351, 1444  
 serotiny, 501  
 serpentine, 124  
 seston, 2337  
*Setaria faberii*, 2114  
 sex allocation, 1750, 2136  
 sex differences, 1884  
 sex ratio, 367, 798, 1529, 2444  
 sex-specific foraging behavior, 1959  
 sexual dimorphism, 279, 1529  
 sexual selection, 1406, 1414  
 sexual size dimorphism, 367, 1414  
 sexual systems, 1750  
 shade tolerance, 1500  
 shade vs. gap plant survival, 265  
 shade-tolerant tropical trees, 261  
 shading, 30  
 shared predators, 2395  
 shifting landscape mosaics, 1567  
 shoreline colonization, 2430  
 shrub-steppe ecosystem, 2231  
 shrubs, 2125  
 shuttling, 377  
 sibling competition, 367, 2161  
 similarity indices, 977  
 simulated herbivory, 2066  
 simulation, 2215  
 site nitrogen status, 2098  
 size at first reproduction vs. population size structure, 1455  
 size distribution, 1234  
 size selectivity, 1297  
 size structure, 798  
 skinks, 1970  
 slash-and-burn agriculture, 140  
 small mammals, 2003  
 snails, 1264  
 snow, 1722  
 snow buttercups, 1052  
 snow geese, 2045  
 social structure, 1444  
 sodium, 442  
 soil ammonium, 612  
 soil expansion, 583  
 soil fertility, 1117  
 soil microbiology, 840  
 soil moisture and nutrients, 1490  
 soil nitrate, 612  
 soil nutrients, 612, 1043  
 soil organic matter, 1713  
 soil phosphate, 612  
 soil potassium, 612  
 soil seed banks, 2231  
 soil water, 549  
 soil water potential, 68  
*Solidago*, 561, 1101, 1117  
 South Africa, 1490  
 south Sweden, 244  
 Southern Appalachian Mountains, 55, 1551  
 southern Finland, 714  
 southwest Spain, 152  
 soybean, 840  
 space, 1362  
 space competition, 195  
 sparrow, 734  
*Spartina*, 96  
 spatial autocorrelation, 826, 1659  
 spatial heterogeneity, 162, 292, 1615, 1646, 1826  
 spatial pattern, 999, 1700

spatial scale, 1700, 1826  
 spatial structure, 1538, 1615  
 spatial variation, 2192  
 spatial variation in pollen abundance, 826  
 specialist, 47, 1778  
 species composition, 977, 1847  
 species diversity, 1847  
 species interactions, 726, 2381  
 species packing, 627  
 species richness, 2179  
 species selectivity, 1297  
 specific root length, 561  
*Spermophilus beldingi*, 2168  
*Spermophilus columbianus*, 2164  
*Spermophilus tridecemlineatus*, 377  
 spheniscid, 1204, 2450  
 spiderling, 427  
 spiders, 1826  
*Spilosoma congrua*, 1778  
 spittlebug, 39, 1101, 1117  
*Sporobolus vaginiflorus*, 2161  
 St. Martin, 1216  
 stability, 1347, 1362  
 stable age distribution, 2164  
 stable carbon isotope, 643, 1713  
 stable isotopes, 2098, 2315  
 stage-classified models, 1444  
 stage-structure, 2381  
 standard metabolic rate, 1157  
 standard operative temperature, 377  
 standardization, 919  
 starvation risk, 419  
 stationary age distribution, 2164  
 statistical power, 1475, 2164  
 statistical techniques, 1674  
 statistics, 1677, 2204  
 stem curling, 1073  
 sticklebacks, 258, 699  
 stochastic vs. deterministic processes, 1847  
 stomatal conductance, 113, 798  
 stoneflies, 1836  
 stopping rules, 2204  
 storage, 792  
 strategy theory, 863  
 stream, 1264, 1594, 1836, 1856, 2326  
 stream ecology, 685  
 stream fertilization, 653  
 stream fishes, 685  
 strength of feeding links, 252  
 stress, 863  
 stress avoidance, 798  
 stress tolerance, 798  
 sublethal effects, 1836  
 substrate quality, 152  
 succession, 55, 1347, 1567  
 succession on lava, 1012  
 successional status, 2125  
 sugar maple, 513  
*Sula nebouxii*, 2462  
 sun-shade responses, 1500  
 supplemental feeding, 244  
 surface runoff, 570  
 survival, 342, 433, 673, 1982, 2192  
 survival and growth of tadpoles, 183  
 survival in litter vs. sand patches, 501  
 survivorship, 332  
 susceptible, 2297  
 suspended clay, 944  
 sustainable forestry, 583  
 swamp, 2240  
 Sweden, 1136

swimming energetics, 2450  
*Sylvania*, 513  
 symbiosis, 1767  
 synchronous broods, 1191  
 synchrony, 455

T

taiga, 714  
 tallgrass prairie, 113, 549, 561  
*Tamias amoenus*, 1307  
 tannin, 55, 615, 763, 2072  
 taxonomy in food webs, 252  
 temporal heterogeneity, 162, 1500  
 temporal overlap, 174  
 temporal partitioning, 174  
 temporal variation, 542, 2430  
 terrestrial, 226  
*Tetragratha*, 1826  
 Tettigoniidae, 1406  
 three-trophic-level interaction, 258  
 thrips, 39  
 thymidine, 1475  
 tidal flooding, 96  
 tidal marshes, 96  
 time budget, 390, 2450  
 time course of light availability, 1500  
 time of breeding, 2027  
 time series, 303  
 time-budget analysis, 1313  
 time-specific life tables, 2164  
 tissue construction costs, 1516  
 tissue nutritional quality, 2261  
 tits, 2037  
 tolerance succession, 195  
*Tolumnia variegata*, 1033  
 top-down, 944  
 topography, 549, 2098  
 torpor, 1173  
 tortoise beetle, 1394  
 trade-off, 419, 1414  
*Tramea*, 207  
 transience, 2020  
 transitivity, 1693  
 transpiration, 1516  
 travelling wave, 1538  
 tree, 570, 792  
 tree invasion, 1792  
 tree leaves, 1713  
 tree mortality, 1551  
 tree seedlings, 1792  
 treefall gap, 1559  
 treefrog calling sites, 623  
 treefrog oviposition sites, 623  
 Trinidad, 1856  
*Troglodytes aedon*, 1191  
 trophic interactions, 1475  
 trophic link, 252  
 trophic organization, 944  
 trophic relations, 1216  
 trophic species, 252  
 trophic web complexity, 219  
 tropical, 1856  
 tropical fish food web, 643  
 tropical forest, 140, 265  
 tropical rain forest, 1802, 2125  
 tropical seedling survival vs. predation, 261  
 tropical trees, 1529  
 tropics, 455  
*Tsuga canadensis*, 982  
 tundra river, 653

turbidity, 944  
turbulence, 1428  
*Turdus migratorius*, 1326  
turnover, 714  
turtles, 332  
twig biomass availability, 2261  
type III analysis, 1638

## U

*Uca*, 279  
unbalanced data, 1638  
unequal sample sizes, 1638  
unexplained nitrogen, 583  
Upper Michigan, 513  
upstream flight, 2315  
Utah, 798, 2413

## V

*Vaccinium corymbosum*, 751  
*Vaccinium macrocarpon*, 751  
*Vaccinium vacillans*, 751  
variability, 1939  
variation in dispersal dynamics, 2430  
variation in nitrogen intake, 1939  
vegetation change, 96  
vegetation dynamics, 1567  
vegetation patterns, 1281  
vegetative propagation, 615, 2125  
vertical migration, 1467  
visitation rate, 2145  
visual decisions among fruits, 1326  
volatilization of nutrients, 140  
volcanoes, 1012  
vole, 30, 1792  
vole population, 1197

## W

water balance, 570, 1307  
water content, 1722  
water loss, 1307

water relations, 113, 549, 798  
water stress, 1516  
water-use efficiency, 798, 1516  
watershed, 2098  
wave forces, 1677  
wave generation, 1538  
weather systems, 2303  
web relocation, 1915  
weed spread, 999  
weighted sampling, 2436  
western spruce budworm, 442  
wetlands, 2240  
white-tailed deer, 2279  
Wilbur-Collins model, 2405  
wild parsnip, 47  
*Willow Ptarmigan*, 743  
wind damage, 1559  
wind pollination, 528  
wind speeds, 1677  
winter, 419  
winter fattening, 1183  
winter-hardy cacti, 1722  
Wisconsin, 826  
within-bill decisions, 1326  
Wood Duck, 2027  
woody plants, 977

## X

*Xiphister mucosus*, 891

## Y

yellow pine chipmunk, 1307  
yield-effort curve, 252

## Z

zonation, 226  
*Zonotrichia*, 734  
zooplankton, 303, 320, 944, 1234, 1467, 2337, 2351, 2361  
*Zostera capricorni*, 1475  
*Zostera marina*, 904